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Shaw et al.

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(54) **FRONTAL ATTACHMENT DEVICE FOR
SYRINGE WITH ROTATIONALLY
ACTIVATED RETRACTABLE NEEDLE**

(56) **References Cited**

U.S. PATENT DOCUMENTS

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TX (US)

4,466,446	A	8/1984	Baidwan et al.
4,747,831	A	5/1988	Kulli
4,813,426	A	3/1989	Haber et al.
4,941,883	A	7/1990	Venturini
4,973,316	A	11/1990	Dysarz
5,163,916	A *	11/1992	Sunderland 604/198
5,263,942	A	11/1993	Smedley et al.
5,298,023	A	3/1994	Haber et al.
5,370,628	A	12/1994	Allison et al.
5,395,337	A	3/1995	Clemens et al.
5,423,758	A	6/1995	Shaw
5,445,618	A *	8/1995	Adobbati 604/192
5,503,010	A	4/1996	Yamanaka
5,573,510	A	11/1996	Isaacson
5,685,863	A	11/1997	Botich et al.

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FOREIGN PATENT DOCUMENTS

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(57) **ABSTRACT**

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A61M 5/32 (2006.01)

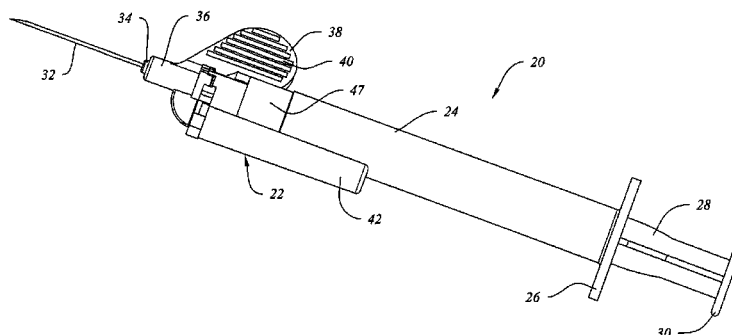
A medical device attachable to the front of a conventional syringe and having a hub assembly selectively attachable to the syringe, a nose projecting forwardly from the hub assembly, a rearwardly biased needle retraction mechanism seated inside the nose, a retractable needle projecting forwardly of the nose, and a fluid flow path from the fluid chamber through the hub assembly, nose, needle retraction assembly and needle, wherein the needle is retracted into the nose and a retraction tube external to the syringe by rotating the syringe relative to the nose.

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2005/3227 (2013.01)

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See application file for complete search history.

3 Claims, 10 Drawing Sheets



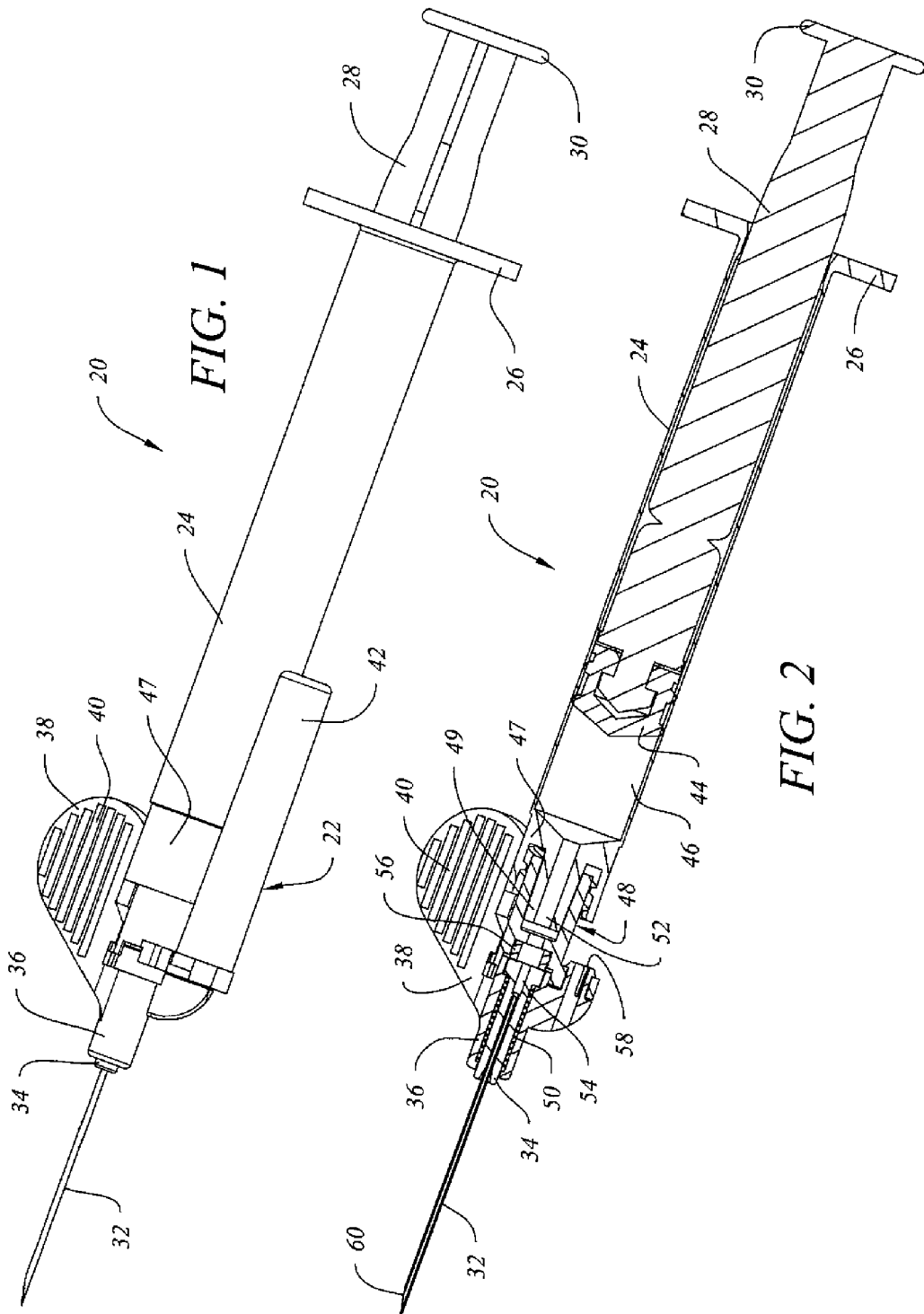
(56)

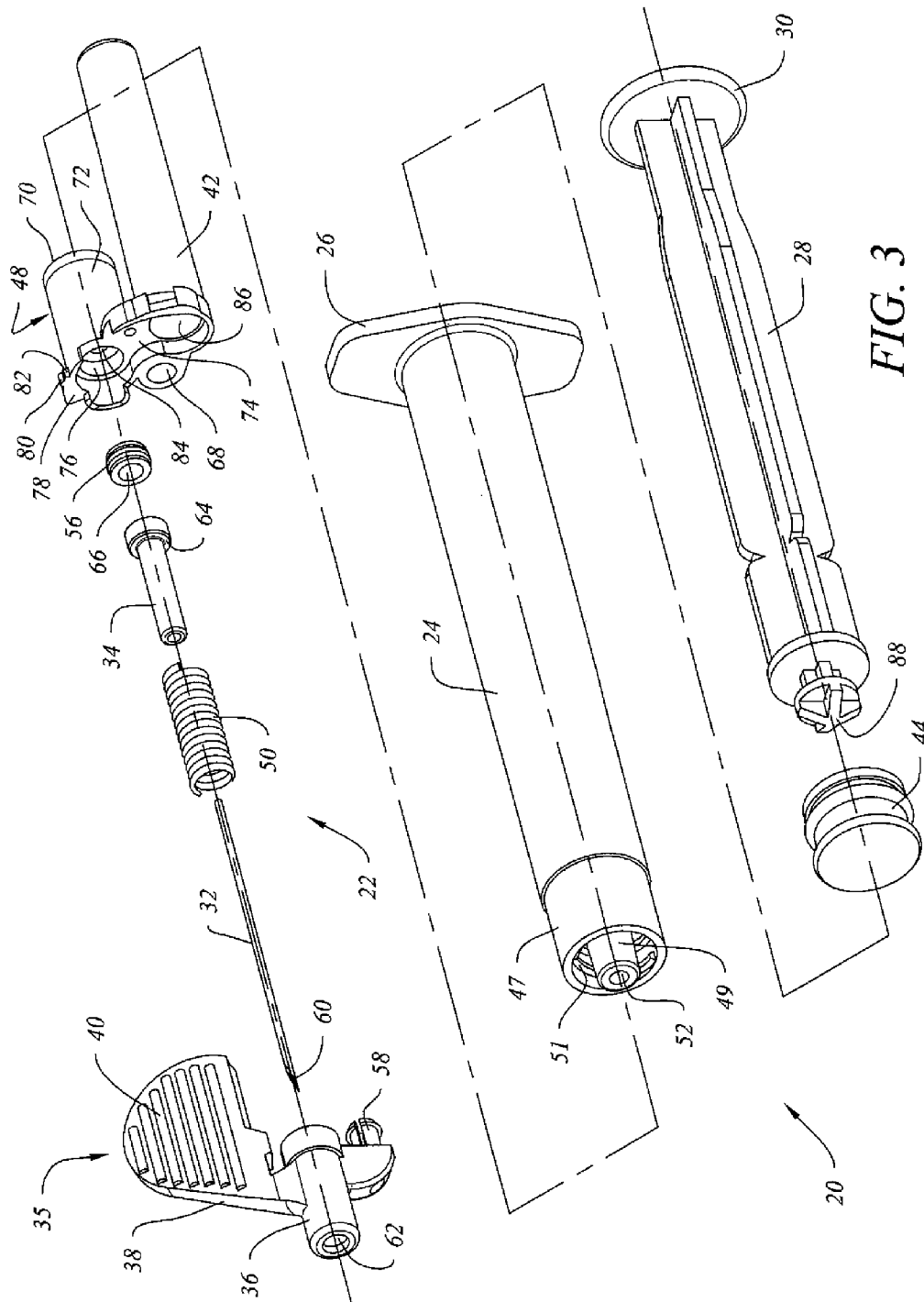
References Cited

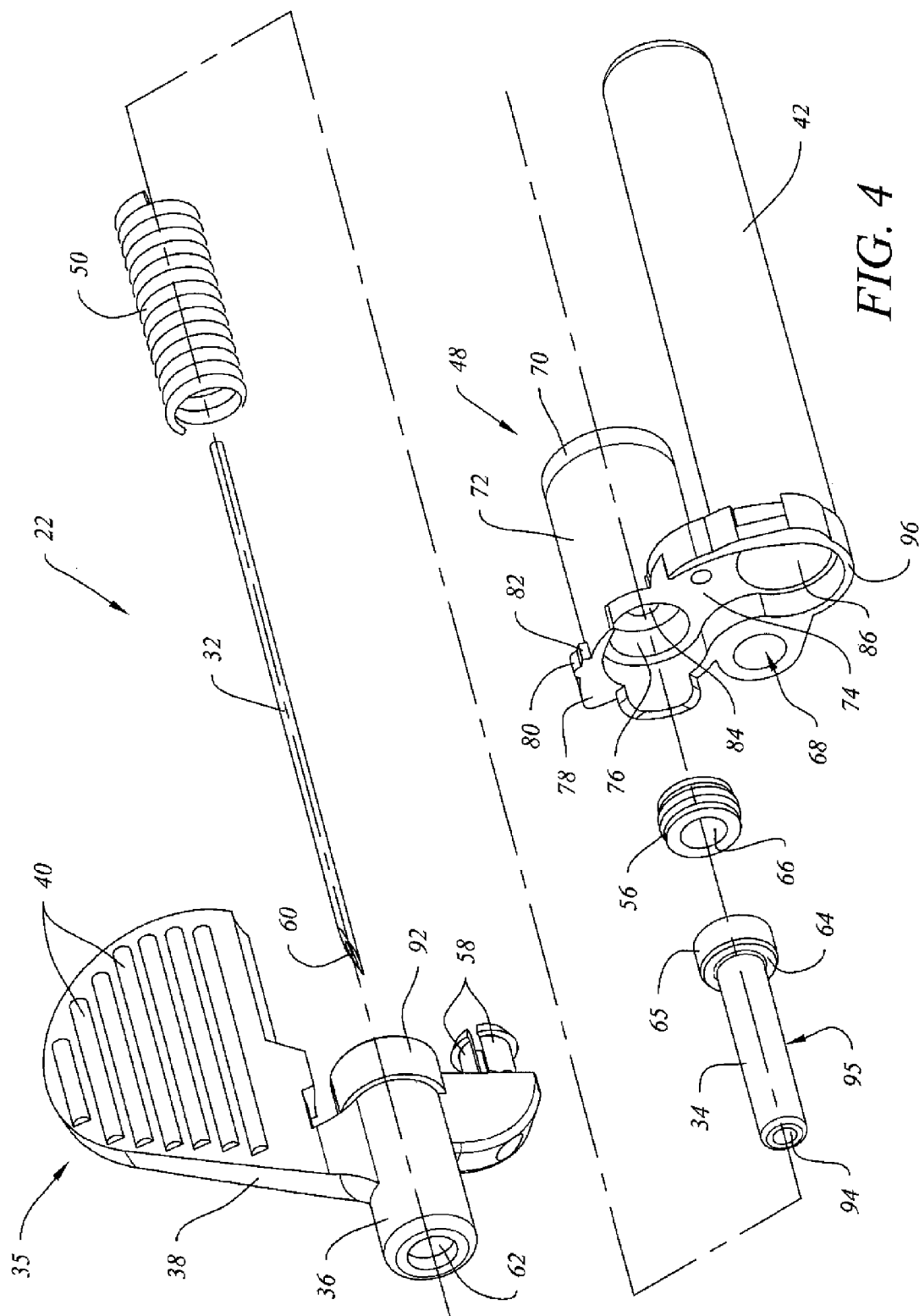
U.S. PATENT DOCUMENTS

5,704,920	A *	1/1998	Gyure	604/192	2004/0015135	A1	1/2004	Wilkinson	
5,728,073	A	3/1998	Whisson		2004/0019329	A1	1/2004	Erskine	
5,779,679	A	7/1998	Shaw		2004/0204688	A1	10/2004	Lin et al.	
5,795,339	A	8/1998	Erskine		2005/0004524	A1	1/2005	Newby et al.	
5,957,887	A	9/1999	Osterlind et al.		2005/0288607	A1	12/2005	Konrad	
5,964,731	A	10/1999	Kovelman		2006/0155244	A1 *	7/2006	Popov	604/162
6,039,713	A	3/2000	Botich et al.		2006/0189934	A1	8/2006	Kuracina et al.	
6,063,040	A	5/2000	Owen et al.		2006/0235354	A1	10/2006	Kaal et al.	
6,210,371	B1	4/2001	Shaw		2007/0260189	A1	11/2007	Shaw et al.	
6,277,102	B1 *	8/2001	Carilli	604/240	2008/0132851	A1	6/2008	Shaw et al.	
6,468,250	B2	10/2002	Yang		2008/0132854	A1	6/2008	Sharp	
6,808,512	B1	10/2004	Lin et al.		2008/0287881	A1	11/2008	Kiehne	
6,974,423	B2 *	12/2005	Zurcher	600/576	2008/0319345	A1	12/2008	Swenson	
7,351,224	B1	4/2008	Shaw		2009/0198196	A1	8/2009	West et al.	
8,292,852	B2	10/2012	Mulholland		2009/0306601	A1 *	12/2009	Shaw et al.	604/177
8,343,094	B2	1/2013	Shaw		2010/0000040	A1	1/2010	Shaw et al.	
8,469,927	B2 *	6/2013	Shaw et al.	604/110	2010/0003067	A1	1/2010	Shaw et al.	
8,496,600	B2 *	7/2013	Shaw et al.	600/576	2010/0241029	A1	9/2010	Mahurkar	
8,500,690	B2	8/2013	Crawford		2010/0286604	A1	11/2010	Shaw	
2001/0021827	A1	9/2001	Ferguson et al.		2010/0317999	A1	12/2010	Shaw et al.	
2002/0068907	A1	6/2002	DySarz		2011/0264037	A1	10/2011	Foshee et al.	
2002/0082560	A1 *	6/2002	Yang	604/181	2012/0022464	A1	1/2012	Zivkovic et al.	
2003/0078540	A1	4/2003	Saulenas et al.		2012/0071790	A1	3/2012	Mahurkar	
2003/0181871	A1	9/2003	Wilkinson et al.		2012/0078225	A1	3/2012	Zivkovic et al.	
2003/0236504	A1 *	12/2003	Chen	604/201	2012/0226232	A1 *	9/2012	Shaw et al.	604/110
					2012/0259243	A1	10/2012	Shaw et al.	
					2012/0316466	A1	12/2012	Crawford et al.	
					2014/0012206	A1 *	1/2014	Shaw et al.	604/198

* cited by examiner







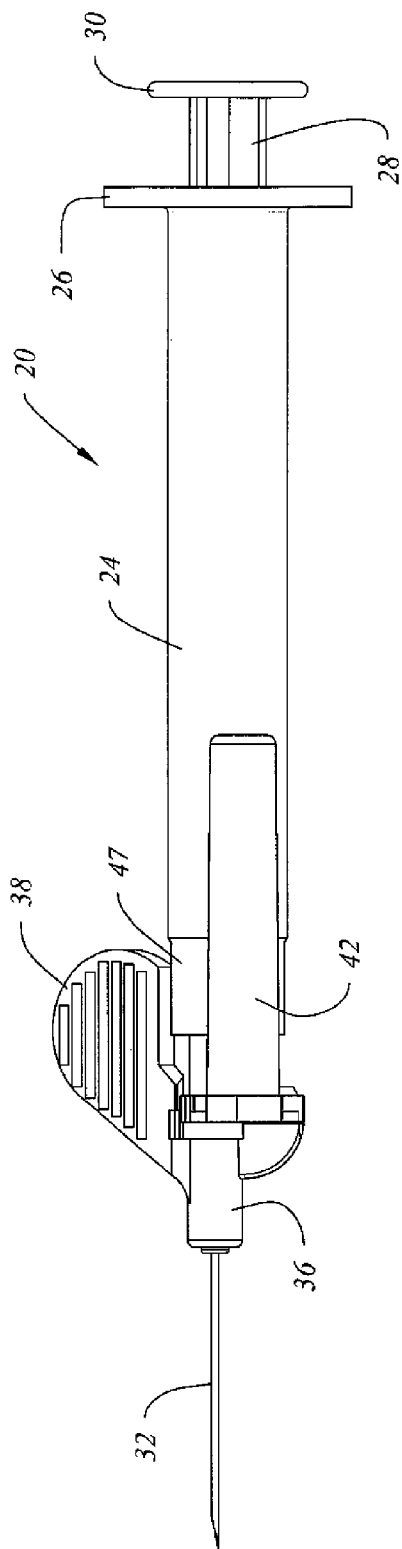


FIG. 5

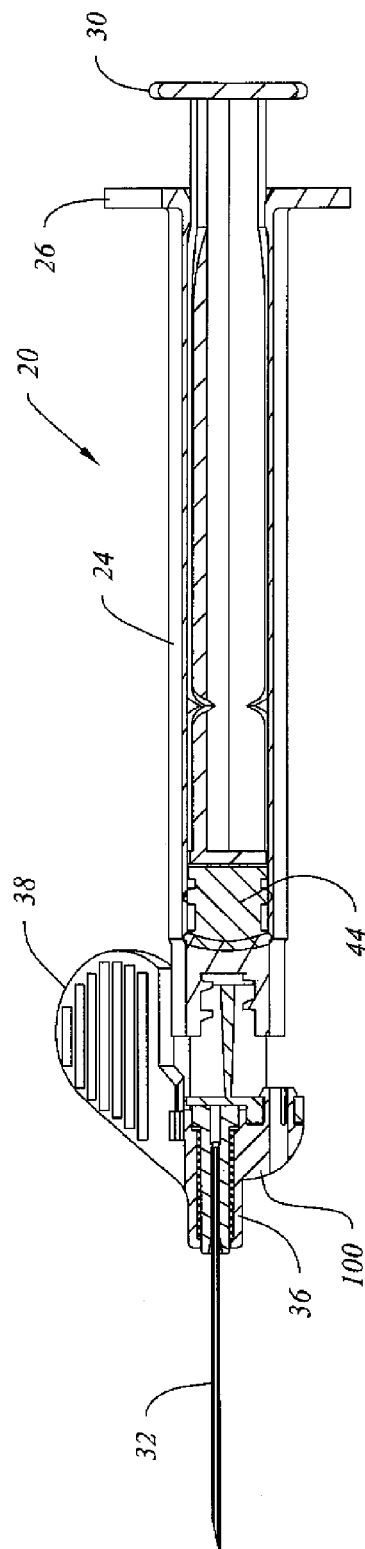


FIG. 6

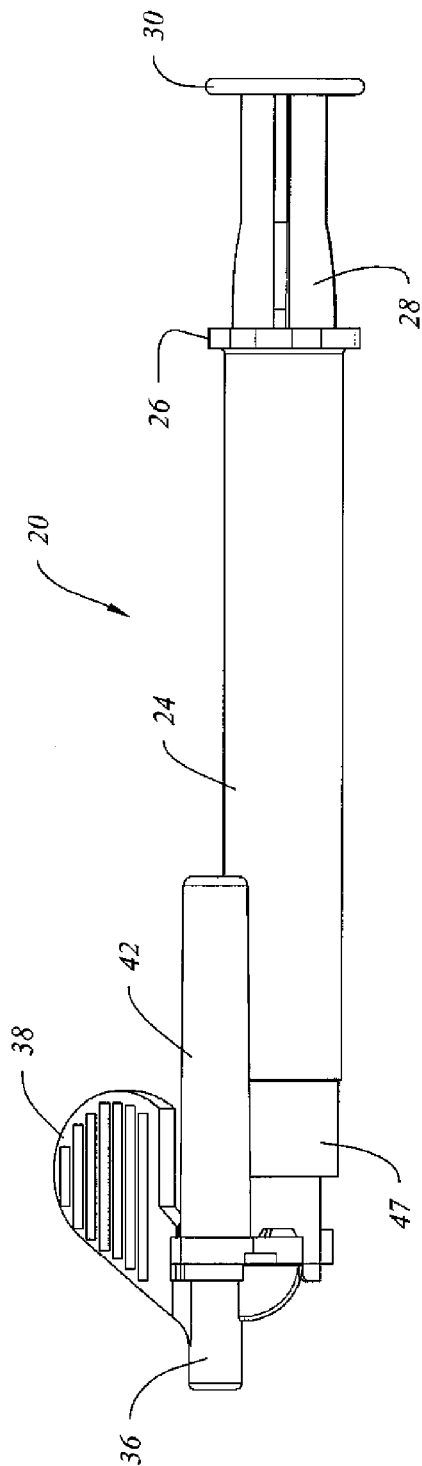


FIG. 7

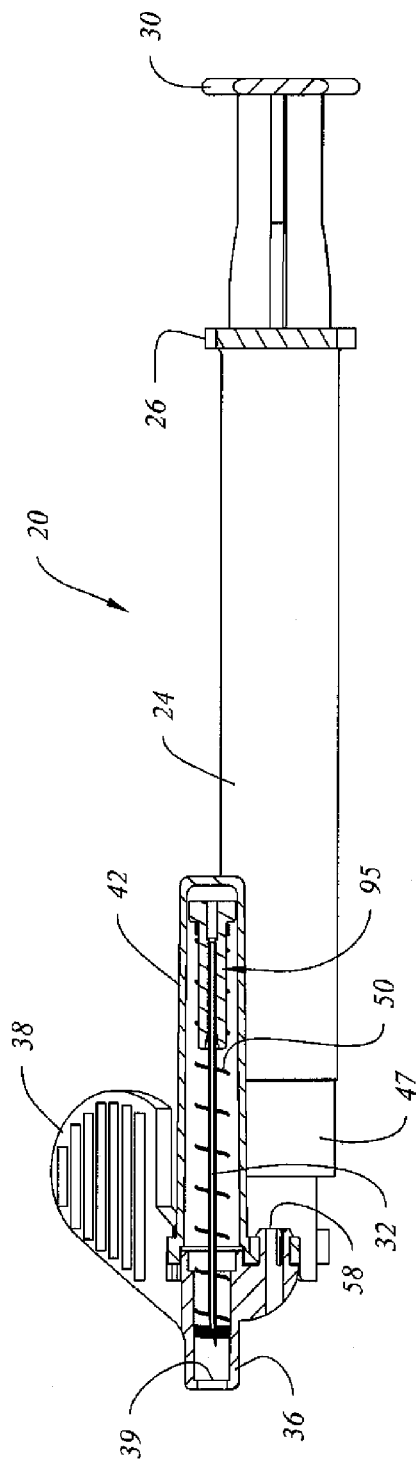
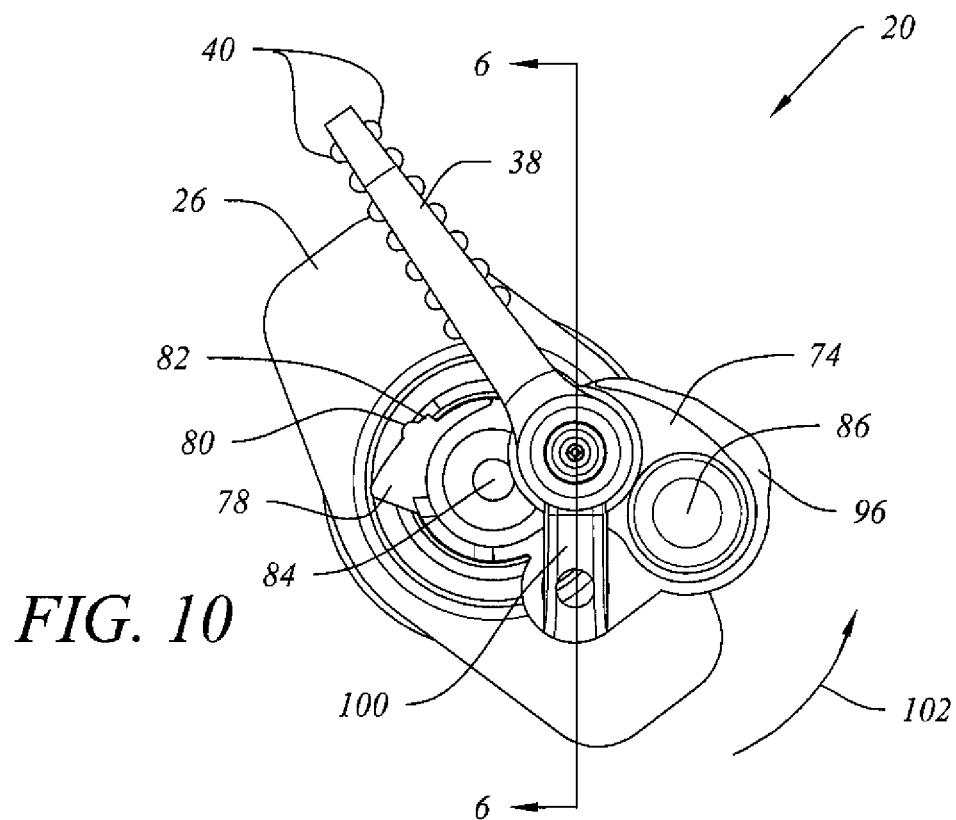
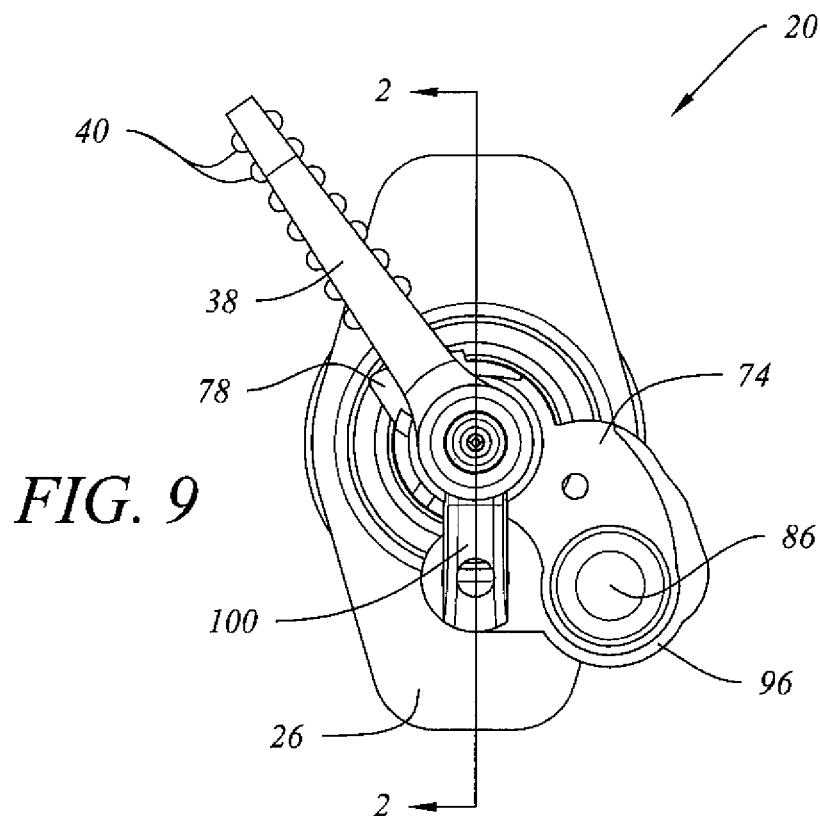
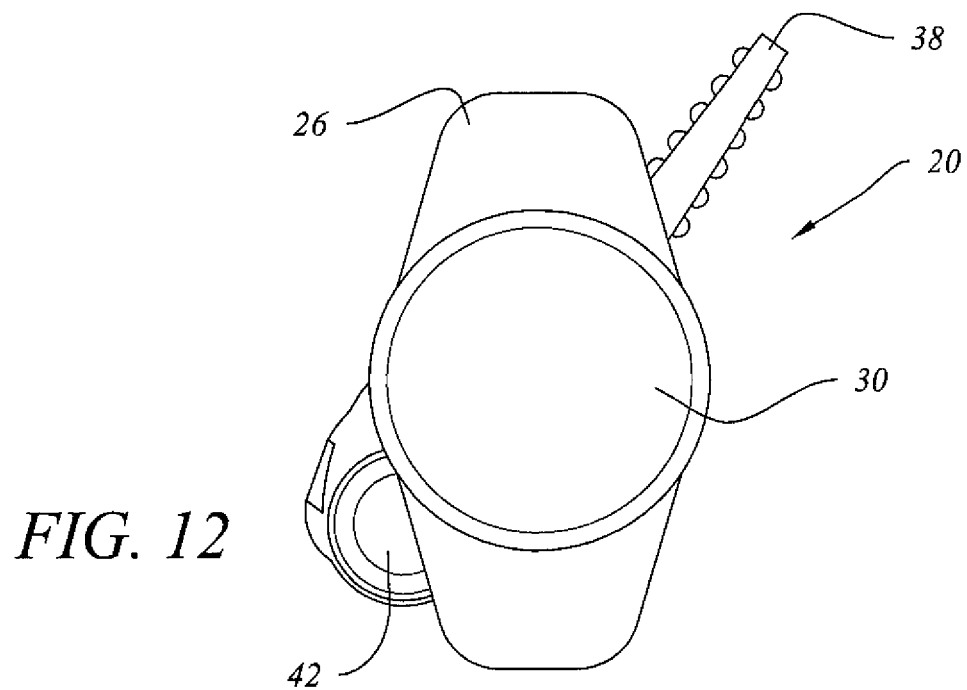
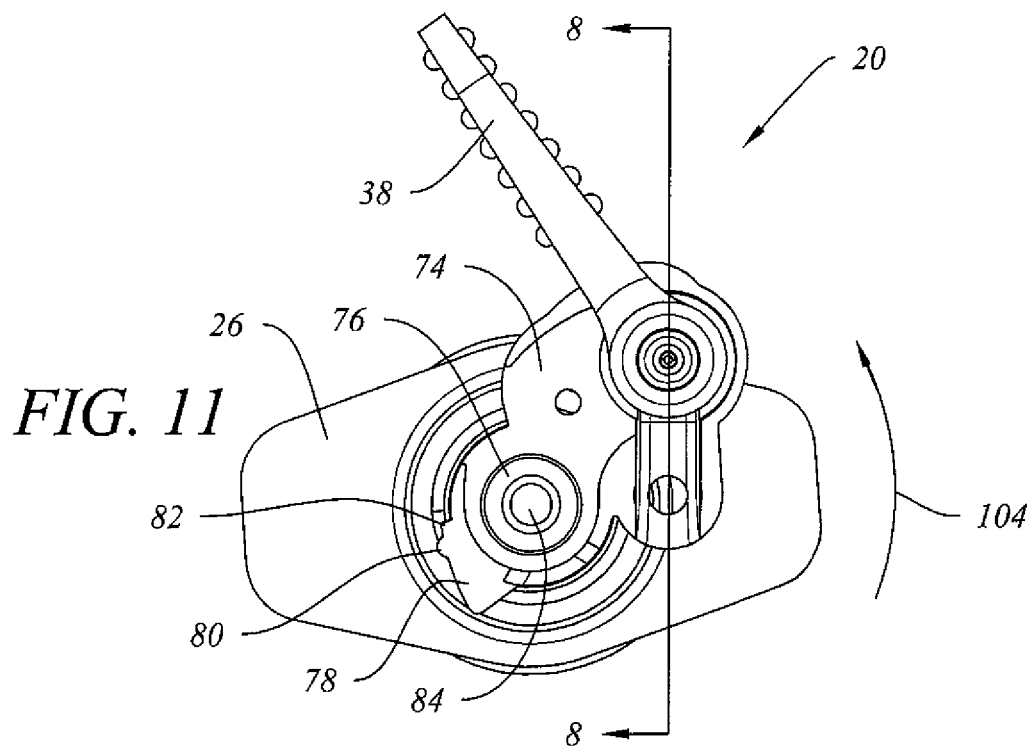
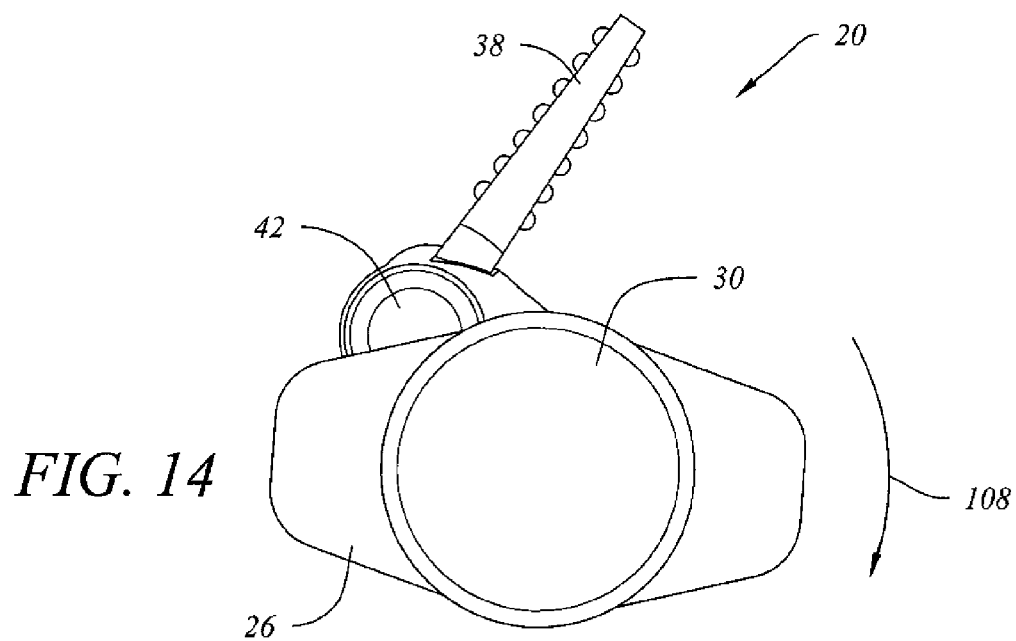
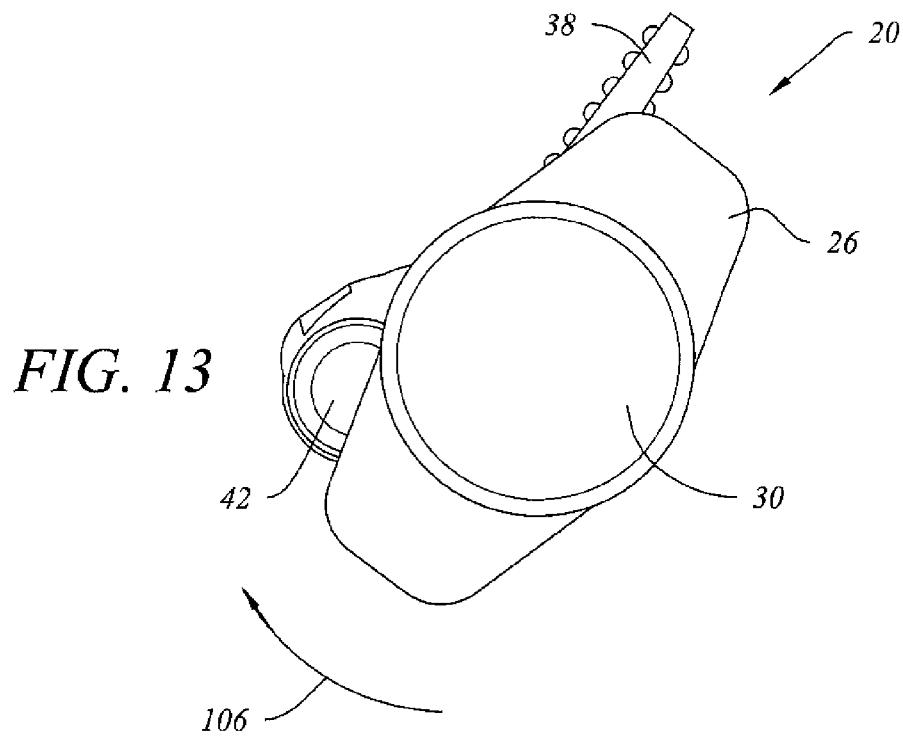


FIG. 8







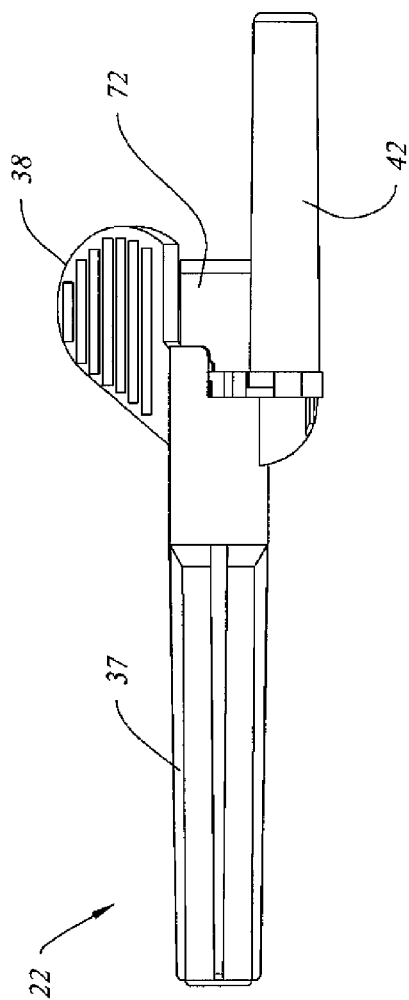


FIG. 15

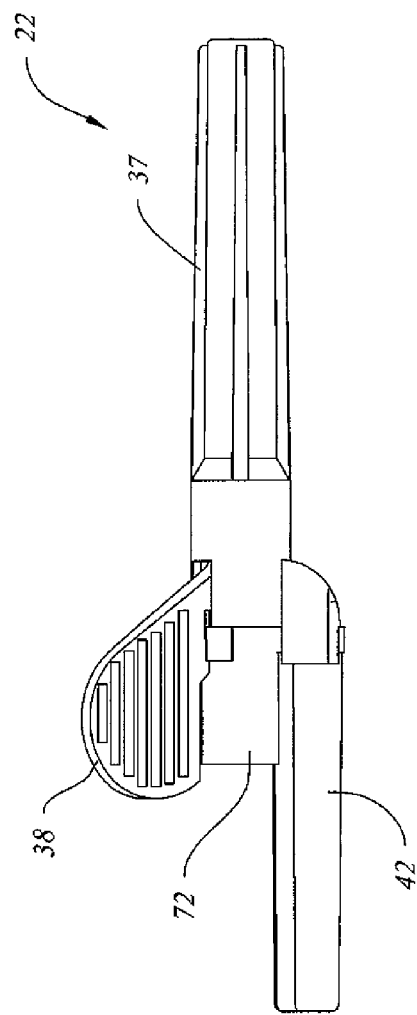


FIG. 16

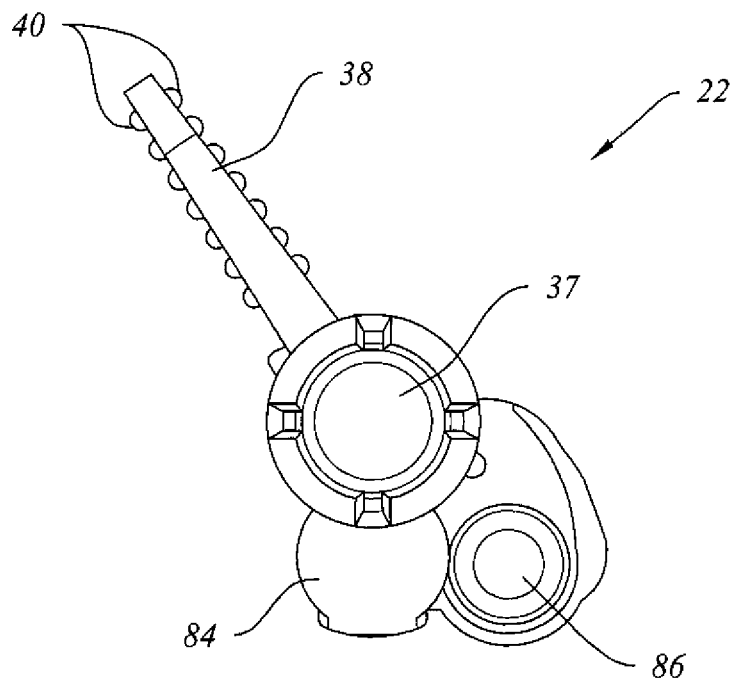


FIG. 17

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FRONTAL ATTACHMENT DEVICE FOR SYRINGE WITH ROTATIONALLY ACTIVATED RETRACTABLE NEEDLE

CROSS-REFERENCE TO RELATED APPLICATIONS

This application claims the benefit under 35 U.S.C. 119(e) of the earlier filing date of U.S. Provisional Patent Application No. 61/737,263 filed Dec. 14, 2012.

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to the use of conventional syringes in combination with a newly disclosed frontal attachment having a retractable needle. The invention relates more particularly to a medical device comprising in combination a needle, nose and hub assembly attachable to a conventional syringe preferably having a forwardly facing luer lock connector. The subject device has a needle retraction mechanism that is activated by rotating the syringe barrel relative to the nose of the device to retract the needle from a patient and propel it into the nose and a retraction tube that is part of the hub assembly.

2. Description of Related Art

Conventional syringes comprising a generally cylindrical barrel, a fixed needle projecting forwardly from the barrel, and a plunger slidably disposed inside the barrel through an opening in the rear of the barrel are well known. More recently, syringes have been made with a luer connector on the front of the barrel to which a needle hub is attachable to allow needles of different gauges or sizes to be used with a commonly configured barrel.

Even more recently, in an effort to control the spread of blood-borne pathogens and the incidence of contamination by contact with either exposed needles or bodily fluids, syringes having fixed or changeable needles have been designed to embody various "safety" elements. Such "safety" elements should desirably include a retractable needle, but many products marketed as having "safety" elements include, for example, covers or guards that are manually operated by medical personnel administering an injection to shield or cover the needle tip following removal of the needle from a patient.

Some previously disclosed needle retraction systems without changeable needles are activated either manually or automatically by application of a force upon completion of an injection to force the needle and needle tip back inside a retraction chamber. The only known syringe having a changeable, retractable needle does not have a conventional luer lock connection, and the retraction mechanism is activated by the application of a forwardly directed force to the plunger handle following removal of the needle from a patient, thereby exposing the needle and also exposing the user to the risk of needle-stick injury.

U.S. Pub. No. 2006/0155244 to Popov discloses a venipuncture device that rotates a port unit following needle retraction. The retraction chamber is disposed inside the medical device, is not part of the frontal attachment and remains stable while the port unit is moved rotationally relative to the retraction chamber following needle retraction. The frontal attachment disclosed there cannot be used with a generic luer lock syringe.

Although many advancements in syringe technology have been made in recent years, a frontal attachment device is needed that can be used with a standard syringe having a conventional luer lock connector, that offers the advantages

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of a changeable needle in combination with the advantages of a retractable needle providing sufficient retraction force to retract the needle while inserted into a patient, and that can be activated by the application of a rotational force to the syringe barrel while stabilizing the nose without applying a forwardly directed force to the plunger or the needle.

SUMMARY OF THE INVENTION

A medical device is disclosed that comprises a hub assembly selectively attachable to the front of a conventional syringe, a nose projecting forwardly from the hub assembly, a rearwardly biased needle retraction mechanism seated inside the nose, a retractable needle projecting forwardly of the nose, and a fluid flow path from the fluid chamber through the hub assembly, nose, needle retraction mechanism and needle, wherein the needle is retracted following use into the nose and a retraction tube external to the syringe by rotating the syringe relative to the nose. As used throughout this disclosure, the terms "attachable," "detachable" and "changeable" are generally used to characterize frontal attachments, such as needles or needle/hub combinations, that are selectively attachable to, detachable from, or otherwise changeable in relation to a syringe for purposes such as, without limitation, selecting a particular gauge needle for a particular clinical use.

A medical device as disclosed here can be configured to be attachable to the front of a conventional syringe having a luer lock connector. If desired, a medical device as disclosed here can also be made with a snap-on or other attachment mechanism instead of a conventional luer lock connector provided that the syringe with which it is used is cooperatively configured. A medical device as disclosed here desirably comprises a needle that is retractable, and retraction is activated by applying rotational rather than axial force to the syringe barrel. A satisfactory medical device as disclosed here desirably has sufficient retraction force to retract a needle that is still inserted into a patient's body and thereby prevents exposure of the contaminated needle to others. A medical device as disclosed here desirably utilizes a retraction tube that is not embodied in the syringe or plunger handle, and is instead part of the attachable hub assembly.

A satisfactory hub assembly for use in the invention as disclosed here comprises a hub disposed forwardly of the plunger, a retraction tube laterally spaced apart from the hub, and a frame member interconnecting the hub and the retraction tube in substantially fixed, laterally spaced-apart relation to each other. A medical device made in accordance with the invention desirably further comprises a nose projecting forwardly from the hub and is attached to the frame so as to permit the hub assembly to move laterally in relation to the nose between a first position axially aligned with the hub and a second position axially aligned with the retraction tube. A rearwardly biased needle retraction mechanism comprising a needle holder and retraction spring is desirably seated inside the nose; and a retractable needle projects forwardly of the nose. A fluid flow path is thereby provided from the fluid chamber of a syringe through the hub, nose, needle retraction assembly and needle; and an annular fluid seal is desirably disposed around a portion of the fluid flow path between the hub and the nose.

Following an injection using a syringe provided with the medical device disclosed here, a clinician administering the injection desirably grasps a stabilizer tab provided at the nose of the device with the thumb and finger or fingers of one hand to stabilize the body and nose, and with the other hand, rotates the syringe barrel in a clockwise direction (the same direction

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in which the barrel is rotated during attachment of the syringe to the device prior to use). As the body and nose are stabilized, the syringe barrel and the attached hub assembly are rotated relative to the nose, which first causes the hub to slide laterally out of coaxial alignment with the head of the needle holder. As the hub slides out of engagement with the rearwardly biased needle holder, preferably in a curvilinear arc, a portion of the frame member disposed between and connecting the hub to the laterally spaced-apart retraction tube comes into abutting engagement with the needle holder to continue holding the retraction spring in its compressed position. The needle holder remains rearwardly biased until such time as a forwardly facing opening into the retraction tube sufficiently approaches coaxial alignment with the needle holder to allow the compressed retraction spring to propel the needle holder rearwardly into the retraction tube. As this occurs, the needle holder also carries the attached needle rearwardly to a fully retracted position where the needle is released from the patient and the needle tip no longer projects forwardly from the nose.

In this way, the medical device disclosed here is configured to convert rotational motion of the syringe to curvilinear translational realignment of the nose and the needle holder from coaxial alignment with the hub to coaxial alignment with the retraction tube.

BRIEF DESCRIPTION OF THE DRAWINGS

The apparatus of the invention is further described and explained in relation to the following drawings wherein:

FIG. 1 is a side elevation view of one embodiment of a syringe having selectively attached to its front end one embodiment of a medical device comprising in combination a nose, a needle or cannula projecting forwardly of the nose, a needle retraction mechanism seated inside the nose, and a hub assembly;

FIG. 2 is a cross-sectional view of the apparatus of FIG. 1 taken along line 2-2 of FIG. 9;

FIG. 3 is an exploded perspective view of the apparatus of FIG. 1;

FIG. 4 is an enlarged detail view of the attachable medical device of FIG. 1;

FIG. 5 is a side elevation view of the apparatus of FIG. 1 with the syringe plunger advanced to the post-injection position and the hub assembly rotated clockwise relative to the nose;

FIG. 6 is a cross-sectional view of the apparatus of FIG. 5 taken along line 6-6 of FIG. 10;

FIG. 7 is a side elevation view of the apparatus of FIG. 5 with the plunger advanced to the post-injection position and the hub assembly rotated further clockwise relative to the nose;

FIG. 8 is a cross-sectional view of the apparatus of FIG. 5 taken along line 6-6 of FIG. 10;

FIG. 9 is a front elevation view of the apparatus of FIG. 1;

FIG. 10 is a front elevation view of the apparatus of FIG. 5;

FIG. 11 is a front elevation view of the apparatus of FIG. 7;

FIG. 12 is a rear elevation view of the apparatus of FIG. 1;

FIG. 13 is a rear elevation view of the apparatus of FIG. 5;

FIG. 14 is a rear elevation view of the apparatus of FIG. 7; and

FIGS. 15-17 are right, left side and front elevation views, respectively, of the medical device of FIG. 1, with a needle cover installed prior to use.

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Like reference numerals are used to describe like features in all Figures of the drawings.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIGS. 1 and 2 depict an assembled combination 20 of syringe barrel 24, having a luer lock connector 47, 49 disposed at the front end and a plunger handle 28 with plunger seal 44 slidably engaging the inside wall of syringe barrel 24, and a satisfactory medical device 22 of the invention having a hub assembly 48 that is attached to luer lock connector 47, 49 so as to establish fluid communication between fluid chamber 46 of syringe barrel 24 and needle 32. Plunger handle 28 extends rearwardly from an opening in the back of syringe barrel 24 and is positioned relative to syringe barrel 24 as it could be prior to the injection of a fluid disposed inside fluid chamber 46 into a patient if tip 60 of needle 32 were inserted into the patient, recognizing that the position of plunger seal 44 relative to barrel 24 will depend upon the amount of fluid that is drawn into fluid chamber 46. The injection force is applied to a fluid disposed inside fluid chamber 46 through plunger handle 28 by depressing thumb cap 30 of plunger handle 28 while stabilizing syringe barrel 24 by applying oppositely directed finger force to the forwardly facing surfaces of outwardly projecting flanges 26.

During or following the injection, a clinician administering the injection can grasp the textured surfaces of outwardly projecting stabilizer tab 38 of medical device 22 to stabilize medical device 22 and rotate syringe barrel 24, preferably in a clockwise direction (as viewed from the back of assembled combination 20), relative to stabilizer tab 38 of nose 35 (best seen in FIG. 4). Although medical device 22 of the invention can be made so as to permit rotation of syringe barrel 24 in either a clockwise or counter-clockwise direction relative to stabilizer tab 38 of nose 35 to achieve needle retraction, one or more mechanical barriers to counter-clockwise rotation of syringe barrel 24 are desirably provided to avoid accidentally unthreading luer lock connector 47, 49 of syringe barrel 20 from nose 35.

Satisfactory structural elements for use in combination 20 and in medical device 22 of the invention are further described and explained in relation to FIGS. 1-4. Medical device 22 as shown comprises nose 35, a retraction mechanism further comprising a needle holder 95 (FIG. 4) and a compressed retraction spring 50 seated inside nose 35, and hub assembly 48 comprising hub 72, frame member 74, retraction tube 42 further comprising retraction cavity 86, and an annular fluid seal such as fluid seal 56 that is desirably disposed between nose 35 and hub 72, preferably inside a recess 76 in the forwardly facing portion of hub 72. A plurality of radially projecting locking wedges 70, diametrically opposed as shown, or other similarly effective engagement elements are provided at the rear of hub 72 to facilitate locking engagement with locking luer connector 47, 49 of syringe barrel 24.

Referring to FIG. 4, needle holder 95 as shown comprises elongated cylindrical shaft portion 34, a larger diameter head 65, which is seated against an annular shoulder inside substantially cylindrical body 36 of nose when the retraction mechanism is seated inside nose 35 prior to attaching nose 35 to hub assembly 48 as further described below. Prior to seating needle holder 95 inside body 36 of nose 35, retraction spring 50 is desirably compressed (spring 50 is shown compressed in FIGS. 2-4 and relaxed in FIG. 8) between an annular nose 39 near the front of body 36 (best seen in FIG. 8) and annular shoulder 64 (FIG. 4) on the forwardly facing

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surface of head **65** of needle holder **95**. The length of cylindrical shaft portion **34** of needle holder **95** is desirably such that the forwardly extending end of shaft portion **34** will project slightly beyond the front of body **36** as seen in FIG. 1.

As shown, nose **35** further comprises substantially cylindrical body **36** having a rearwardly facing collar **92**, and an outwardly projecting stabilizer tab **38** with textured gripping elements **40**. Body **36** of nose **35** desirably further comprises an attachment tab **100** (FIG. 6) projecting radially outward below the longitudinal axis through interior cavity **62** that has a rearwardly projecting, split cylindrical boss **58** configured to snap into a cooperatively aligned orifice **68** in frame member **74** of hub assembly **48**. Nose **35** is thereby rotatably attached to hub assembly **48** with the axis of rotation offset being offset from the longitudinal axes through hub **72** and retraction tube **42** so as to define an arc through which hub assembly **48** can be moved translationally from a first position characterized by coaxial alignment of hub **72** with body **36** to a second position characterized by coaxial alignment of retraction tube **42** with body **36** to initiate retraction following injection. Although the structural elements as disclosed are satisfactory for rotatably mounting nose **35** in relation to hub assembly **48**, it will be appreciated by those of ordinary skill in the art upon reading this disclosure that other structural elements and configurations can be substituted for those particularly disclosed here to achieve the same functionality within the scope of the invention. Broadly stated, such functionality comprises rotating a syringe barrel following injection to move the barrel translationally relative to a nose portion comprising a retraction mechanism to initiate retraction of a needle from a patient into a cavity inside a retraction tube so that the tip of the needle no longer projects forwardly of the barrel.

As shown in FIG. 3, a syringe suitable for use with medical device **22** of the invention can comprise barrel **24** with radially projecting flanges **26** disposed along the rear portion of barrel **24**, an engagement structure such as luer lock connector **47**, **49** attachable to hub assembly **48**, plunger seal **44** attached to mounting boss **88** of plunger handle **28**, and a thumb cap **30** to facilitate the application of a forwardly directed force to plunger handle **28** relative to barrel **24** during injection. As shown, tapered luer member **49** comprising a substantially cylindrical bore **51** cooperates with annular collar **47** having internal threads **51** disposed in spaced-apart relation to tapered luer member **49** to form luer lock connector **47**, **49** that is engageable with locking wedges **70** of hub **72** to provide a fluid-tight seal between hub **72** and syringe barrel **24**. When combination **20** is assembled as shown in FIG. 1, a continuous fluid flow path is formed from fluid chamber **46** (FIG. 2) through interior **84** of hub **72**, interior **66** of fluid seal **56**, interior **94** of needle holder **95**, and needle **32** (FIG. 4).

Referring to FIGS. 5 and 6, the assembled combination **20** is again shown, but this time with plunger handle **28** advanced relative to syringe barrel **24** to the point it will be following an injection, when plunger seal **44** has forced the fluid out of fluid chamber **46** as previously shown and described in relation to FIGS. 1 and 2. This is the position in which plunger handle **28** will desirably remain relative to syringe barrel **24** during activation of the retraction mechanism and retraction of needle **32**. By comparing the position of retraction tube **42** in FIG. 5 to that shown in FIG. 1, it is apparent that rotation of barrel **24** and retraction tube **42** relative to stabilization tab **38** of nose **35** has already been initiated.

Referring to FIGS. 7 and 8, the assembled combination **20** is again shown, and by comparing the position of retraction tube **42** in FIG. 7 to that shown in FIG. 5, it is apparent that rotation of barrel **24** and retraction tube **42** relative to stabi-

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lization tab **38** of nose **35** has continued to a point where retraction has occurred, and retraction spring **50** has propelled needle holder **95** in retraction tube **42** to a position where no portion of needle **32** is exposed forwardly of body **36**.

FIG. 9 depicts the relative positions of the components of combination **20** as in FIG. 1, but viewed from the front. FIG. 12 depicts the relative positions of the components of combination **20** as in FIG. 1, but viewed from the rear.

FIG. 10 depicts the relative positions of the components of combination **20** as in FIG. 5, but viewed from the front, with arrow **102** showing the direction of rotation of frame member **74** of hub assembly **48** relative to stabilization tab **38**. FIG. 13 depicts the relative positions of the components of combination **20** as in FIG. 5, but viewed from the rear, with arrow **106** showing the direction of rotation of retraction tube **42** and syringe flanges **26** relative to stabilization tab **38**.

FIG. 11 depicts the relative positions of the components of combination **20** as in FIG. 5, but viewed from the front, with arrow **104** showing the direction of rotation of frame member **74** of hub assembly **48** relative to stabilization tab **38**. FIG. 14 depicts the relative positions of the components of combination **20** as in FIG. 5, but viewed from the rear, with arrow **108** showing the direction of rotation of retraction tube **42** and syringe flanges **26** relative to stabilization tab **38**.

Nose **35**, needle holder **95**, hub assembly **48**, syringe barrel **24** and plunger handle **28** are all desirably moldable from a suitable moldable polymeric material. Such materials and molding methods are believed to be well known to those of ordinary skill in the art. Similarly, it will be appreciated by those of skill in the art of syringe design and manufacture that a medical device such as medical device **22** disclosed here can be used with syringes that are either pre-filled or not, and that may comprise component portions made of glass or other suitable materials for particular applications. Similarly, it will be appreciated that fluid seal **56** and plunger seal **44** are desirably made of a rubbery or elastomeric polymeric material of the types commonly known for use in such medical applications. Similarly, it will be appreciated that materials used in the fabrication of this and other medical devices must be approved by the relevant regulatory authorities for use in such devices. Retraction spring **50** and needle **32** as disclosed are desirably made of stainless steel or any other similarly effective material. A needle cover **37** for medical device **22** is shown in FIGS. 15-17 for use with needle **32** while it is disposed in the forwardly projecting position prior to use, and it will be appreciated by those of skill in the art that such needle covers **37** are needed to protect needle **32** from contamination or damage during shipment and storage, and can be designed and fabricated using known technology.

Other alterations and modifications of the invention will likewise become apparent to those of ordinary skill in the art upon reading this specification in view of the accompanying drawings, and it is intended that the scope of the invention disclosed herein be limited only by the broadest interpretation of the appended claims to which the inventors are legally entitled.

We claim:

1. A medical device selectively attachable to a syringe having a barrel with a front end and a back end, a plunger slidably disposed inside the barrel, a fluid chamber disposed forwardly of the plunger, and a plunger handle projecting rearwardly from an opening in the back end of the barrel, the medical device comprising:
 - a hub assembly comprising a hub disposed forwardly of the plunger, a retraction tube laterally spaced apart from the hub, and a frame member interconnecting the hub and

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the retraction tube in substantially fixed, laterally spaced-apart relation to each other;
 a nose projecting forwardly from the hub;
 a rearwardly biased needle retraction mechanism seated inside the nose;
 a retractable needle projecting forwardly of the nose;
 a fluid flow path from the fluid chamber through the hub, nose, needle retraction assembly and needle;
 wherein the barrel and hub assembly are manually rotatable by a user through an arc relative to the nose from a first position wherein hub and barrel are coaxially aligned with the needle and the needle retraction mechanism to a second position wherein the retraction tube is coaxially aligned with the needle and needle retraction mechanism to allow the retraction mechanism to force the needle rearwardly into the retraction tube so that the needle no longer projects forwardly of the nose; and
 wherein the frame member comprises an orifice disposed proximally to the hub and to the retraction tube, and wherein the nose comprises a rearwardly extending boss that is inserted through the orifice and snaps into rotatable engagement with the frame member.

2. A medical device selectively attachable to a syringe having a barrel with a front end and a back end, a plunger slidably disposed inside the barrel, a fluid chamber disposed forwardly of the plunger, and a plunger handle projecting rearwardly from an opening in the back end of the barrel, the medical device comprising:

a hub assembly comprising a hub disposed forwardly of the plunger, a retraction tube laterally spaced apart from the hub, and a frame member interconnecting the hub and the retraction tube in substantially fixed, laterally spaced-apart relation to each other;
 a nose projecting forwardly from the hub;
 a rearwardly biased needle retraction mechanism seated inside the nose;
 a retractable needle projecting forwardly of the nose;
 a fluid flow path from the fluid chamber through the hub, nose, needle retraction assembly and needle;
 wherein the barrel and hub assembly are manually rotatable by a user through an arc relative to the nose from a first position wherein hub and barrel are coaxially aligned with the needle and the needle retraction mechanism to a second position wherein the retraction tube is coaxially aligned with the needle and needle retraction mechanism to allow the retraction mechanism to force the needle rearwardly into the retraction tube so that the needle no longer projects forwardly of the nose;
 wherein the nose further comprises a radially projecting stabilizer tab that is grasped by a user to hold the nose in a substantially fixed position relative to a patient while

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rotating the barrel and hub assembly from the first position to the second position; and
 wherein the nose and the hub assembly are cooperatively configured to allow rotation of the barrel and hub assembly in a clockwise direction relative to the nose as viewed from the back end of the barrel when the stabilizer tab is grasped by the user while rotating the barrel and hub assembly from the first position to the second position.

3. A medical device selectively attachable to a syringe having a barrel with a front end and a back end, a plunger slidably disposed inside the barrel, a fluid chamber disposed forwardly of the plunger, and a plunger handle projecting rearwardly from an opening in the back end of the barrel, the medical device comprising:

a hub assembly comprising a hub disposed forwardly of the plunger, a retraction tube laterally spaced apart from the hub, and a frame member interconnecting the hub and the retraction tube in substantially fixed, laterally spaced-apart relation to each other;
 a nose projecting forwardly from the hub;
 a rearwardly biased needle retraction mechanism seated inside the nose;
 a retractable needle projecting forwardly of the nose;
 a fluid flow path from the fluid chamber through the hub, nose, needle retraction assembly and needle;
 wherein the barrel and hub assembly are manually rotatable by a user through an arc relative to the nose from a first position wherein hub and barrel are coaxially aligned with the needle and the needle retraction mechanism to a second position wherein the retraction tube is coaxially aligned with the needle and needle retraction mechanism to allow the retraction mechanism to force the needle rearwardly into the retraction tube so that the needle no longer projects forwardly of the nose;
 wherein the nose further comprises a radially projecting stabilizer tab that is grasped by a user to hold the nose in a substantially fixed position relative to a patient while rotating the barrel and hub assembly from the first position to the second position; and
 wherein the nose and the hub assembly are cooperatively configured to restrict rotation of the barrel and hub assembly in a counter-clockwise direction relative to the nose as viewed from the back end of the barrel when the stabilizer tab is grasped by the user while rotating the barrel and hub assembly from the first position to the second position.

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